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THE AMERICAN NATURALIST.

VOL. XV. — JUNE, 1881. — No. 6.

ARCHÆOLOGY OF VERMONT.

BY PROF. GEO. H. PERKINS.

IN a paper published in the NATURALIST for December, 1879, the writer attempted to present the chief physical features of the Champlain valley, and to give a general idea of its archæology. That paper may suffice as an introduction to the present and future papers, in which some of the more important groups of archæological objects will be discussed more fully than would be possible in a more comprehensive article. Before proceeding, however, to the main topic of this article, I wish to add a few general statements to those previously given. It has been a cause of some surprise to me to discover a close resemblance between many of our most peculiar Vermont specimens and others from the Mohawk valley and other parts of New York. We should naturally expect to find similarity, as we do, in the specimens found on the eastern and western shores of Lake Champlain, but we should scarcely expect to find many nearly identical specimens in Western Vermont and Central New York. But Mr. Frey, near Palatine bridge, and Rev. Mr. Beauchamp, near Baldwinsville, find stone tubes, carvings, amulets, &c., some of which are precisely like those found in Vermont, but not, at least up to this time, found in the region bordering the western shore of Lake Champlain. In many respects our collections of stone implements and pottery from Western Vermont seem more closely allied to those from the Mohawk and Genesee valleys than to those from other parts of

New England. Vermont is, to a certain extent, divided by the Green mountains into two archæological regions, though perhaps it is not best to make this distinction too prominent. So far as the more recent specimens are concerned, we should expect this to be the case, for, while the early history of Vermont is not very full in its account of the Indians whom the white men found, we are told a few facts respecting their habits, and among other things that those living on the western side of the Green mountains rarely crossed them. For instance, Hall, in his "History of Eastern Vermont," page 585, says: "The Iroquois seldom crossed the mountains, and have left few marks of their presence in the eastern part of the State." He goes on to tell us that, "the country in the neighborhood of Lunenburg and Newbury (in Northeastern Vermont), and on the side of the river opposite to the latter place, was called by the Indians "Coos," which word in the Abenaki language is said to signify "the Pines." At this point and at other localities on the Upper Connecticut, formerly resided a branch of the Abenaki tribe. These Indians were called Coosucks, and being defeated in battle by the white settlers in 1725, they went back to Canada whence they had come, and in 1760 a few returned to Coos. As to the extent of this settlement there seems to be no definite information. In a small work published in 1841 by Rev. Grant Powers, entitled "Historical Sketches of Coos County," on pages 39-40 we find the following: "On the high ground east of the mouth of Cow Meadow brook, and south of the three large projecting rocks, were found many indications of an old and extensive Indian settlement. There were many domestic implements. Among the rest were a stone mortar and pestle. * * * Heads of arrows, large quantities of ashes, and the ground burnt over to a great extent, are some of the marks of a long residence there. * * * On the meadow, forty or fifty rods below, near the rocks in the river, was evidently a burying ground. The remains of many of the sons of the forest, are there deposited. Bones have frequently been turned up by the plow. That they were buried in the sitting posture, peculiar to the Indians, has been ascertained. When the first settlers came here, the remains of a fort were still visible on the Ox Bow. * * * The size of the fort was plain to be seen. Trees as large as a man's thigh were growing in the circumference of the old fort. A profusion of white flint-stones and

heads of arrows may yet be seen scattered over the ground." I have not been able to ascertain the existence of a collection of the above-mentioned implements, and it is probable that like many other similar objects, they were thrown aside by their finders as useless. This is to be regretted, as a collection of stone implements, the locality of which was certain and also the tribe that made and used them, would be of great value to us as a basis of a more definite ethnology than is at present possible, or probably ever will be.

Proceeding now to special groups of objects, we will first examine those implements commonly known as "gouges," and which for convenience will be so designated in the following pages, though, as will appear, it is not the belief of the writer that all, if any, of them were used for the purposes for which our modern gouges are designed. I have chosen this class of implements for description before all others, because, as archæologists well know, they are eminently characteristic of eastern collections, very few having been found in the Mississippi valley and none, I believe, in the mounds, and are especially characteristic of our Vermont collections. It seems probable that the gouge is of comparatively modern origin, and was made and used by such tribes or nations as the Algonkins and Iroquois, and were unknown to more ancient peoples. This implement is not, I believe, common in any other part of the world except the Eastern United States; and even here they are not so abundant as to occur in great numbers in our collections, yet they form an important part of them. Presenting great variety in form, size and material, the gouges seem rather to form a class of implements, some designed for one purpose and some for another, than to be simply different forms of one implement. The absence of gouges from large portions of this country, is the more remarkable because we find so many other implements either in identical or similar forms over all that portion of the United States east of Kansas.

The general character and variety in form and material of the Vermont gouges will best appear in the following descriptions and figures, which include all the different classes which I have seen, though each of these may be taken as a type of which varieties may exist. The gouge described on page 744 of Vol. XIII of the *NATURALIST*, and figured on page 741, may serve as a type of still a different form from any

here mentioned, and should properly have been embraced in this article.

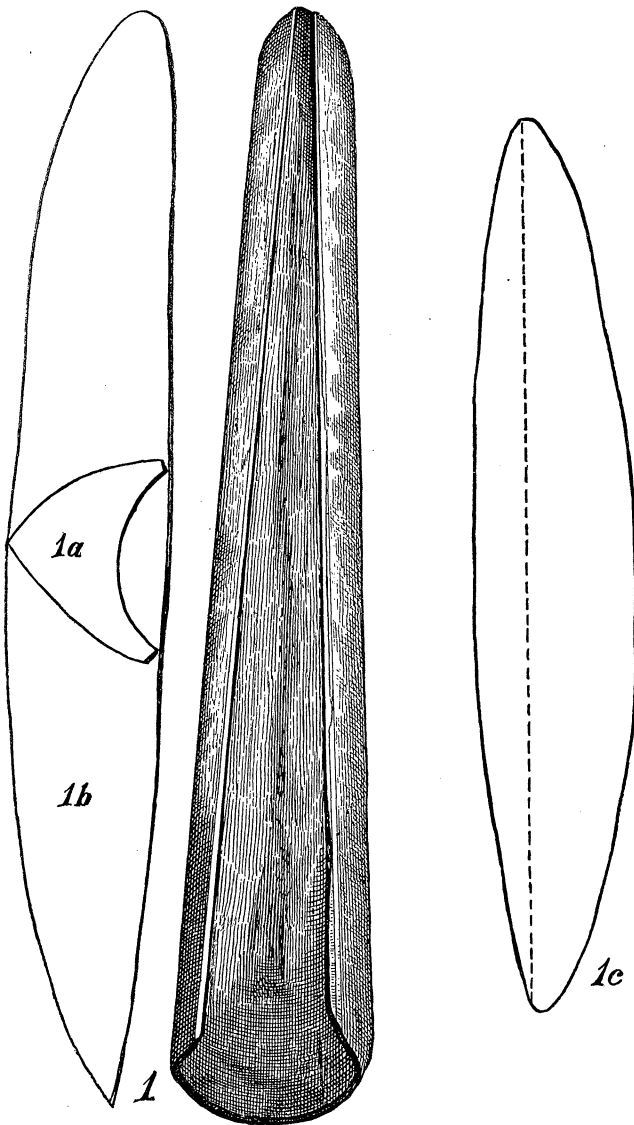
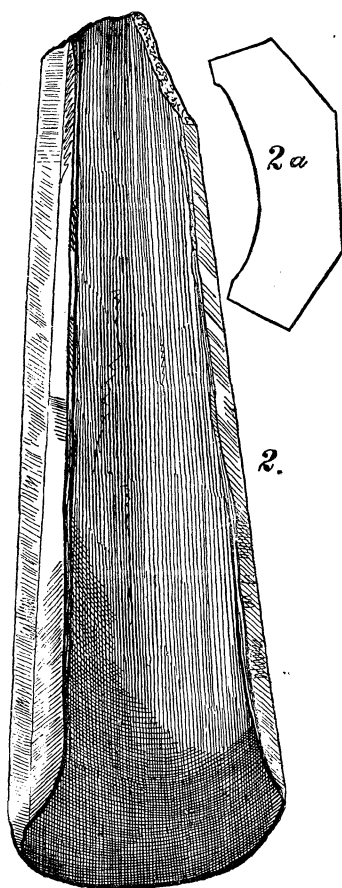


FIG. I.—Indian "Gouges."

In Fig. I we have a representation, reduced one-half, of a speci-

men which has the general characters of the longest gouges that have been found. In all of these the groove runs from end to end, becoming narrower, as does the specimen itself, towards the upper end. One specimen of this sort is nineteen inches in length. The material is always some hard, compact stone, like basalt, which is wrought into the desired form with very great skill. The specimen figured is 11.5 inches long; its form is very symmetrical, and the surface smooth and in some portions polished. The upper surface is mainly occupied by the groove and there is, on each side of this, a narrow flat portion from which the sides curve downward and approach each other until they meet in a median ridge, on the lower side, so that a cross section is of the form shown at 1*a*. The under side is also curved from end to end, bending upwards rapidly to form the edge, so that a longitudinal section is of the form shown in 1*b*. In most of these implements the main portion of the bevelling at the edge is from beneath, though generally the upper surface is also beveled, often abruptly, downwards. The edge in this specimen is very regularly curved, is sharp, and 1.65 inches in width—the width of the opposite end being less than half as much. Near the edge the groove is .5 inch deep, but grows shallower as well as narrower as it recedes from the end. The greatest thickness of the implement is near the middle, where it amounts to 1.5 inch. Other specimens are wider in proportion to the length, for instance, in one case where the length is somewhat more than 9 inches, the width is, in the widest part, 2 inches. In this specimen we find the widest part about a third of the distance from the edge to the other end, and from this point the width decreases somewhat to the edge, and much more to the other end, and the same peculiarity is seen in the thickness, so that a longitudinal section is somewhat unequally fusiform, the upper side curving less than the lower, as seen in Fig. 1*c*. As the line of the groove, indicated by the broken line in the figure, is straight, the depth seems to be greater near the middle than at either end. In cross section this specimen is like Fig. 1*a* except that it is much broader in proportion to the height. Figure 2 shows a unique form of this sort of gouge. The groove is similar to others, though the edge is not straight, but somewhat oblique. The material is basalt and the specimen was evidently formed with much care and labor, although the surfaces are not polished, but show striæ made by sand used

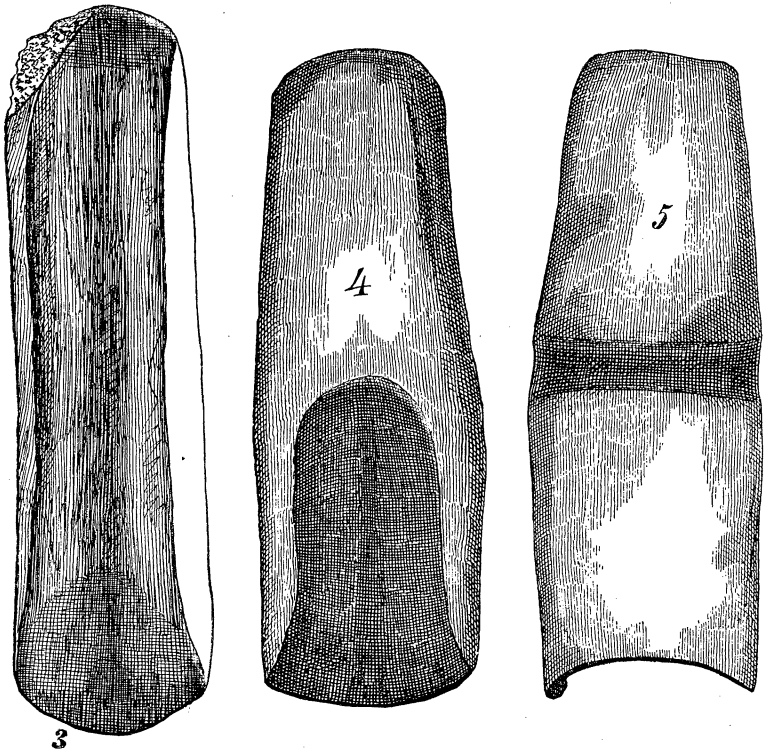
in grinding them. The chief peculiarity of this specimen is in the



form of the lower side, which instead of being more or less convex, as in almost all other specimens, is ground in a series of planes, so that in cross section it has the form of 2a. These surfaces are flat and even, and the edges sharp and true. The groove is very deep and wide. The length of this specimen is 4.75 inches; width, just above the edge, 1.56 inch. This is the only specimen which shows no curved surfaces, except the groove, that I have seen. In some specimens there is a flat space running longitudinally through the middle of the back, but usually even this is convex, or raised into a sharp ridge; many others are flat on the upper side, but in all some of the surfaces are convex. In figure 3 we have another variety of gouge, in which, as in the foregoing, the groove extends throughout the length, but in this case each end is brought to an edge, and the sides do not converge at one end, as in the specimens thus

FIG. 2.—Indian Gouge. Reduced $\frac{1}{2}$. far mentioned, but are parallel, and the groove is of equal width throughout. One end, as the figure shows, is broken. The under side is very regularly convex. The material is basalt, and the surfaces are pretty well finished. The length is 5.65 inches; width 1 inch. Col. Whittlesey figures on page 117 of the "Ohio Centennial Report," what he calls a "gouge-form skinner," which is somewhat like the above, and mentions three other Ohio specimens which he has seen. Although gouges in which the groove extends through the entire length are not uncommon, yet this is not the form of nearly all such implements. More have a groove which extends only a short distance from the edge. Figures 4 and 5 show the opposite sides of one of this

kind. This implement, the general form of which is shown in the figures referred to, is convex on both surfaces, so that a cross

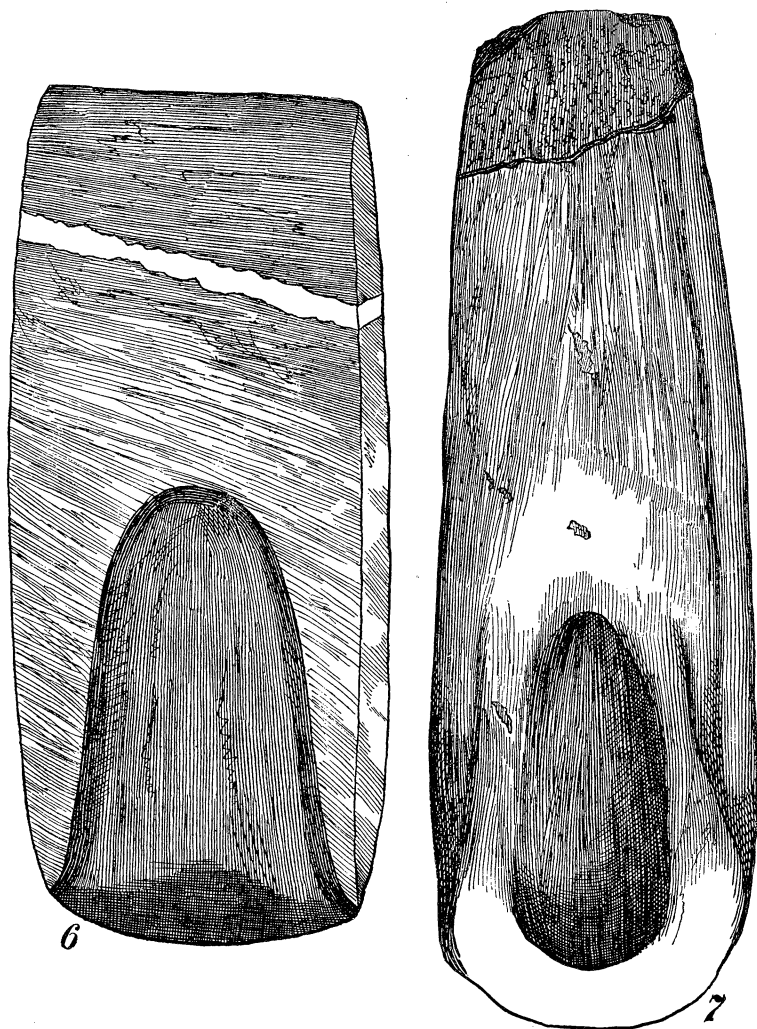


FIGS. 3, 4, 5.—Indian Gouge. Reduced one-half.

section is oval. The groove, regularly rounded above and in every way well formed, is well polished. Indeed, it is scarcely necessary to mention this, for whatever may be the character of the other parts of one of these specimens, the groove, and usually the adjacent portions, is always well finished and polished. As seen in figure 5, this specimen has, across the under side, a transverse groove, which divides it into two nearly equal portions. I have seen one or two other specimens of similar form, which were similarly grooved. Whether we are to regard this as an indication that the implement was attached to a handle and used as an adze or not may not be clear, but it is difficult to account for this transverse groove in any other way. These grooves are not deep nor worked out with as much care as that at the end. The material of this specimen is a gray talcose slate with the sur-

face very smoothly finished. It is worthy of notice that all the specimens with the groove running from end to end are of hard material, such as trap or basalt, while many of those with a shorter groove, like figure 5, are of the talcose rock mentioned. This is not very hard, but readily takes a smooth surface, and when finished, an implement of this material is often very handsome. Some of the gouges of this material are quite large, though none so large as those first named, or rather they are not so long, but the width is often greater. The basalt gouges are more nearly cylindrical in cross section than most of the talcose ones, which are usually but slightly convex. The latter range in length from four to eight inches. Of the same talcose rock is the specimen seen in figure 6. This specimen is somewhat unique in its rectangular outline and great width, as well as in the chisel-like character of the upper end. I have seen several of this sort—gouge at one end chisel at the other. The chisel end is rather abruptly brought to an edge, which is sharp and even, as is the opposite edge. The material is of a bluish color with a vein of white running across the upper portion. The sides are flat and form sharp angles with the upper and lower surfaces, but they are not parallel, but slope so that the surface seen in the figure is narrower than the opposite. The thickness is greatest near the white band where it is nearly an inch, and from here it grows less towards each end. The width is about the same, 1.75 inch throughout. The length is 4.5 inches. The whole specimen is well finished. Figure 7 shows a very singular gouge-like implement of green gneissoid stone. It is of regular form and well made, those parts of the surface that have not been injured being smooth. The surface shown is flat, or nearly so, while the opposite is somewhat convex. As the figure shows, the groove, which is short and somewhat irregular, does not reach to the end, but stops about a fourth of an inch from it, leaving a space which is ground very smooth and quite strongly bevelled from the end of the groove to that of the implement, and the lower surface is bevelled about this edge so that it is thin and sharp. The use of the groove is not at all apparent in this implement, which, judging from its form, was probably used resting on the bevelled portion between the groove and edge with the groove down. The groove is quite deep and well excavated, but somewhat one sided. The length of this specimen is 5.3 inches; greatest width, 1.65 inch; thickness, 1.15 inch. An-

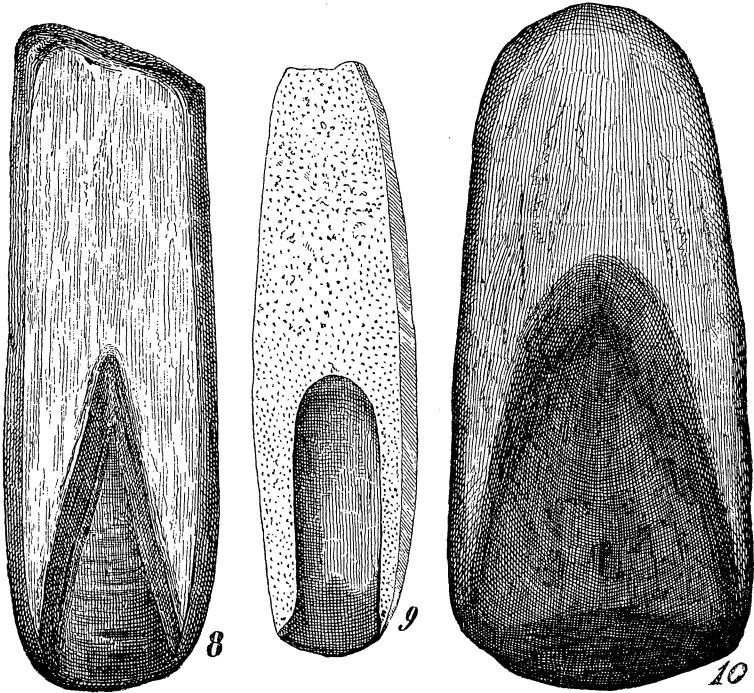
other singular specimen, which should, perhaps, be classed with the above, is quite rudely made of a dark, micaceous rock ; it is triangular in outline, being at the edge 1.9 inch wide and growing narrower towards the other end, which forms a blunt point. In



FIGS. 6, 7.—Indian Gouges. Full size.

thickness the reverse is true, as this is over an inch at the upper end, from which it grows less towards the edge. The groove, if it can be called such, is a small elliptical excavation about a fourth of an inch from the edge. This implement probably shows us the

most rudimentary form of the gouge; indeed, it is essentially a chisel with a small hollowed out space on one surface near the edge. The length of this specimen is 5.2 inches. Figure 8 exhibits another type of gouge of which I have seen quite a number of specimens. In these the excavated portion is triangular and not concave, but with straight sloping sides inclosing a space



Indian Gouges. Figures 8 and 9 reduced one-half; figure 10 full size.

nearly or quite flat, and terminating in a more or less straight edge. The upper surface is flat, and from this the sides curve regularly until they meet behind. The thickness is relatively greater than in other forms, and the appearance suggests the thought that the form was at first cylindrical, and the flat upper surface ground down afterwards. The upper end, while not very evenly shaped, is yet ground smooth and finished like the rest of the implement. The specimen figured is shown one-half full size, being 7 inches long, 1.9 wide and 1.5 inches thick. The sides are straight and nearly parallel. The material is a dark steatite, harder than this material usually is. Other specimens are of syenite and porphyry, and are larger than this. Besides the specimens with

triangular groove and parallel sides, as in figure 8, there are other gouges, with somewhat similar grooves, which taper from the edge almost to a point. One of these of the hard black limestone found abundantly in many parts of Western Vermont, is rather rudely finished, the pick-marks being conspicuous. This specimen, which is 8 inches long, has a very wide, short groove, which shows a peculiarity seen to a less degree in other gouges. It is deeper on each side so that a convex portion occupies the median part of the groove, thus affording a hint of the manner in which the excavated portion was worked out, at least in some cases, *i. e.*, by rubbing or grinding out a narrow groove on each side of the implement and then removing the space included between these. It is possible that some pointed hammer or other implement was used in the excavation of the groove, but only a very few specimens indicate this in any way; in nearly all, the smooth surface, sometimes striated, suggests that the whole was ground out by using sand with some cylindrical instrument. In one specimen, in which the groove is triangular, though concave transversely instead of being flat, as in the above, we find the upper end brought to a chisel edge somewhat like that shown in figure 6, though this latter is much less highly finished, indeed, its material, a sort of mica schist, precludes much elegance in the finish. It is a small implement, being but 4.25 inches long. Both surfaces are flat, and the sides rounded. Figure 9 is a fine specimen, made of a compact, mottled stone of a greenish hue. The surface is smooth, though not polished, except near and in the groove. The surface shown is flat and the edges along the sides are sharp. The lower surface is convex. As is often the case, the thickness is greatest, 1.8 inch, near the middle, and from here the under surface slopes to each end. The form of the groove and of the specimen itself may be understood from the figure. This is a large gouge, as it is 9 inches long and 1.65 inch wide at the edge. The upper end is somewhat rude, but all the rest shows that much care was exercised in making it. There is a species of gouge which is found in various parts of the State quite unlike any of those mentioned. The implements of this sort are of small size with a blunt, rounded edge, wholly unfitted for cutting or even scraping. In some cases, perhaps, this thickness of the edge should be regarded as the effects of use, but it is so regular and of such a character, that I have no doubt that it was

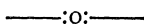
intended to be so. Figure 10 shows one of this sort. The material of all is rather soft, and the surface is not ground so smooth as in many gouges of other forms. The groove is shallow, long and wide, and, as has been noticed, the edge is not sharp. The surface shown is flat, the lower regularly convex. The length of this specimen is 3.5 inches, width across the edge, 1.6 inch, and the thickness in general about .5 inch, though in places more. Still farther removed from gouges with cutting edges, are specimens with a very shallow groove, and with the grooved end not brought to an edge or anything like it, but only worked somewhat thinner than the rest of the implement and then evenly rounded. These are made from talcose or schistose rocks and hence are not very hard.

A comparison of the figures given with these pages will make evident several facts worthy of notice. As the reader has probably discovered, I have included under the name "gouge" a variety of specimens, some of them without very much in common, but it has seemed more convenient to do this than to attempt a subdivision of the group into classes. The term groove has also been for the same reason used to designate the excavated portion of each implement, whatever its character may be. We have seen that in some the edge is straight, in others curved, in some concave, in others flat, and the groove is found in all gradations between a very simple, oval depression and one elegantly wrought and extending through the entire length of the specimen, as in figure 1. In most, the lower surface, by which is always meant that opposite the groove, is convex, both transversely and, to a less degree, longitudinally, though in a few cases the thickness is greatest, not near the center, but at the upper end. This end in nearly all specimens is narrower than the other. In many specimens this end is rough and broken, or splintered, but not in all, for there are specimens in which this end is as smooth as any part of them.

A gouge in which the edge shows signs of hard usage is very uncommon. These facts must be considered when we attempt to discover the purpose for which these implements were designed. I have searched the writings of Champlain and other early explorers for some mention of these implements, and some hint as to their use, but thus far in vain, and without some such aid, theorizing upon the use of these, or any other such implements is of

little value. The most plausible theory for the use of the gouge, is, perhaps, that it was the chief implement used in excavating dug-out canoes. Champlain gives a very brief account of the manner in which some of the Indians whom he met on the coast of Maine, made canoes, and tells how by charring and scraping away the charred wood and again charring it, the desired form was obtained, but he does not give us any definite idea of the form or character of the stone implements with which the work was accomplished, and we know that in many parts of the country, canoes were chiefly made of elm or birch bark. Evans seems to incline towards this view in speaking of the "hollow chisels" of flaked flint found in Denmark, and far less abundantly in England, as he states that they are found chiefly where canoes would be most likely to have been used. We also learn from old writers that gouges made from the columella of the conch, were used by southern tribes for scraping away charred wood in making canoes, and Evans, quoting another, says: "On the western coast of North America mussel shell adzes are still preferred by the Abts to the best English chisels for canoe-making purposes." Bone gouges are also common in the south, more so, according to Col. Jones, than those of stone. I have never seen any other than a stone gouge in Vermont. That some of the specimens figured, or such as they, were thus used, either held in the hand or attached to a handle as adzes, is quite probable, but that all were so used does not seem so. Another theory has been suggested, that the gouges were intended for use in tapping maple trees in the sugar making operations of the aborigines. I cannot see any basis of probability for this theory to rest upon. If this view were correct, we should find gouges most abundantly near those places where the sugar maple is most abundant, but this is not the case, at least in Vermont. On the uplands where the sugar maple now grows, and has for a long time, we do not find gouges as we do on the lowlands and meadows. While the form of such a gouge as that shown in figure 1 might suggest such a use as that just mentioned, the form of most would certainly be a strong argument against such use, and the material of which many are made is such as to unfit them for cutting hard wood such as that of the sugar maple. It is a remarkable fact that so many of our gouges appear to have seen so little service. It would seem certain that implements requiring so much labor for

their formation, and made with such care, must have been designed for some important service, but even those of the comparatively soft talcose rock have as sharp and apparently unused edges as if just made, the polished groove and edge often not showing even a scratch or notch. Some of them are worn, especially some of the smaller specimens, but most are not. Another noticeable fact, which perhaps might be less so in a larger collection, is that each specimen has certain peculiarities of its own, so that it is quite difficult to find duplicates, though they do sometimes occur, but each specimen seems to have been made according to the present fancy of the maker, and this appears to have varied somewhat as each new specimen was undertaken. This variety in form, size and material indicates that the gouge was not an implement designed for a single, limited use, but that, whether we can ascertain the use of the various kinds or not, their uses were as varied as their form and material. Gouge-like implements have been figured as skin dressers by some authors, and this, it seems to me, suggests better than anything else the probable explanation of the character of these implements. If used in cleaning adhering bits of fat or muscle from the skins so generally in use among the aborigines, the edge would remain unworn for a long time, even if the implement were made of no very hard material. It may not improbably be true that some were used in excavating the charred portions of a log selected for a canoe, but it seems more probable that most were used, in one way or another, in the processes of preparing skins for clothing or for whatever other purposes the skins may have been needed.



LARVAL HABITS OF BEE-FLIES.¹

BY C. V. RILEY.

THE bee-flies (*Bombyliidæ*) are a family of *Diptera* that have a rapid, darting flight and hover over flowers, from which they extract nectar by means of a long proboscis which is a characteristic of most of the genera. They derive their popular name of bee-flies, or humble-bee flies, from their general resemblance to bees, due to the hairiness of the body, and enhanced by

¹Adapted from the Second Report of the U. S. Entomological Commission, to which the publishers are indebted for permission to have impressions of the plate made at their expense.